



Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Dennis Sheehy, MCS Administrator
From: Jim Lynch, Director
Date: 1/16/09
Subject: Use of Portable Scales

Dennis, this is to follow up on our conversation on the proper use of portable scales to determine axle weight of commercial vehicles or vehicles over 10,000 lbs.

Please direct your staff that the use of portable scales to determine axle weight must be done in conformance to the scale manufacturer's instructions. Until such time as your officers have been issued equipment to determine the actual slope of the measuring location, they should not be using portable scales to determine axle weight. According to the HAENNI manual, they can continue to use the scales for gross weight provided the longitudinal slope is not greater than 5%.

If you have any questions on this subject please feel free to contact Dwane.

copies: Dwane Kailey
Jennifer Jensen

MDT Haenni (WL 101) Portable Scale Operation

- MDT Patrol officers follow the Haenni operating instructions to weigh trucks.
- Each officer:
 - Carries 6 (six) portable Haenni scales to weight vehicles in order to meet the requirements for accuracy outlined in the Haenni operating instructions, manual appendices.
 - Will be issued and use a six foot long “smart scale” level (slope measuring levels with digital readouts) to measure and record slopes for determining suitable weighing locations, checking longitudinal and transversal slopes.
 - If officer does not use the smart scale level, they only record and enforce gross vehicle weight.
 - Rounds down wheel weight measurement readings to the nearest 100 pounds.
 - Follows Haenni scale operating instruction manual, including appendices A, B and C for site selection.
- MDT Haenni portable scales are:
 - Certified annually by the Montana Department Labor and Industry, Business Standards Div., Weights and Measures Bureau
 - Accuracy checked throughout the year by patrol officers using the following methods:
 - Testing on platform scales; measuring the portable scale measurements and comparing the measurements to a certified platform scale measurements; or
 - Whenever a weight measurement exceeds the 10% tolerance, scale swapping method will be used to verify scale accuracy.
 - If inaccuracies are detected through the testing process, scales are repaired, recalibrated and recertified.
- Portable scale weigh measurements on trucks hauling divisible loads and the application of 10% allowable weight tolerance:
 - Officers determine and record axle weights and gross vehicle weight, following prescribed Haenni operating instructions.
 - Officers compare the axle weights or gross vehicle weight to Montana weight laws for divisible loads, which allow a 10% tolerance from the statutory axle and gross vehicle weight limit.
 - After rounding down each wheel weight measurement to the nearest 100 pounds, officers determine each axle weight and gross vehicle weight and apply Montana weight laws.

TELEPHONE: (410) 574-0102
TOLL FREE: 1-800-753-6696

TELEFAX: (410) 574-2865
E-MAIL: gmuhler@loadometer.com
[HTTP://www.loadometer.com](http://www.loadometer.com)

LOADOMETER

CORPORATION

PORTABLE WEIGHING DEVICES

3 G NASHUA COURT
BALTIMORE, MARYLAND 21221

February 6, 2009

Director Jim Lynch
Montana Department of Transportation
2701 Prospect Avenue
Helena, Montana 59620

Dear Mr. Lynch:


There are two accepted and recommended methods of weighing with portable wheel load weighers. They are single and multiple draft weighing.

Single draft weighing requires as many wheel load weighers as is necessary to place the entire vehicle on the scales at one time. For example a five axle combination vehicle would require 10 scales. The advantage to single draft weighing is a faster process as the vehicle is only positioned once. The disadvantages are a higher operating costs as more equipment is required and a larger vehicle is required to transport the equipment.

The second method and by far the most popular method is multiple draft weighing. A multiple draft weighing is accomplished by using as a minimum two scales and weighing the vehicle by axle groups. When performing a multiple draft weighing the optimum number of scales used is six wheel load weighers. By using six scales, tandem and tri-axle groups can be weighed as a unit eliminating the possibility of weight transfer from one axle to another within that group of axles. The advantage to multiple draft weighing is less equipment is required and smaller more fuel efficient vehicles can be used to transport the scales. The disadvantage is more time is required as the scales need to be repositioned several times to accomplish the procedure.

There is no significant difference in accuracy between the two methods. This is because the requirement of keeping all axles within a group on the same horizontal plane during the weighing process is accomplished with both methods.

Sincerely,



Gary S. Muhler
President

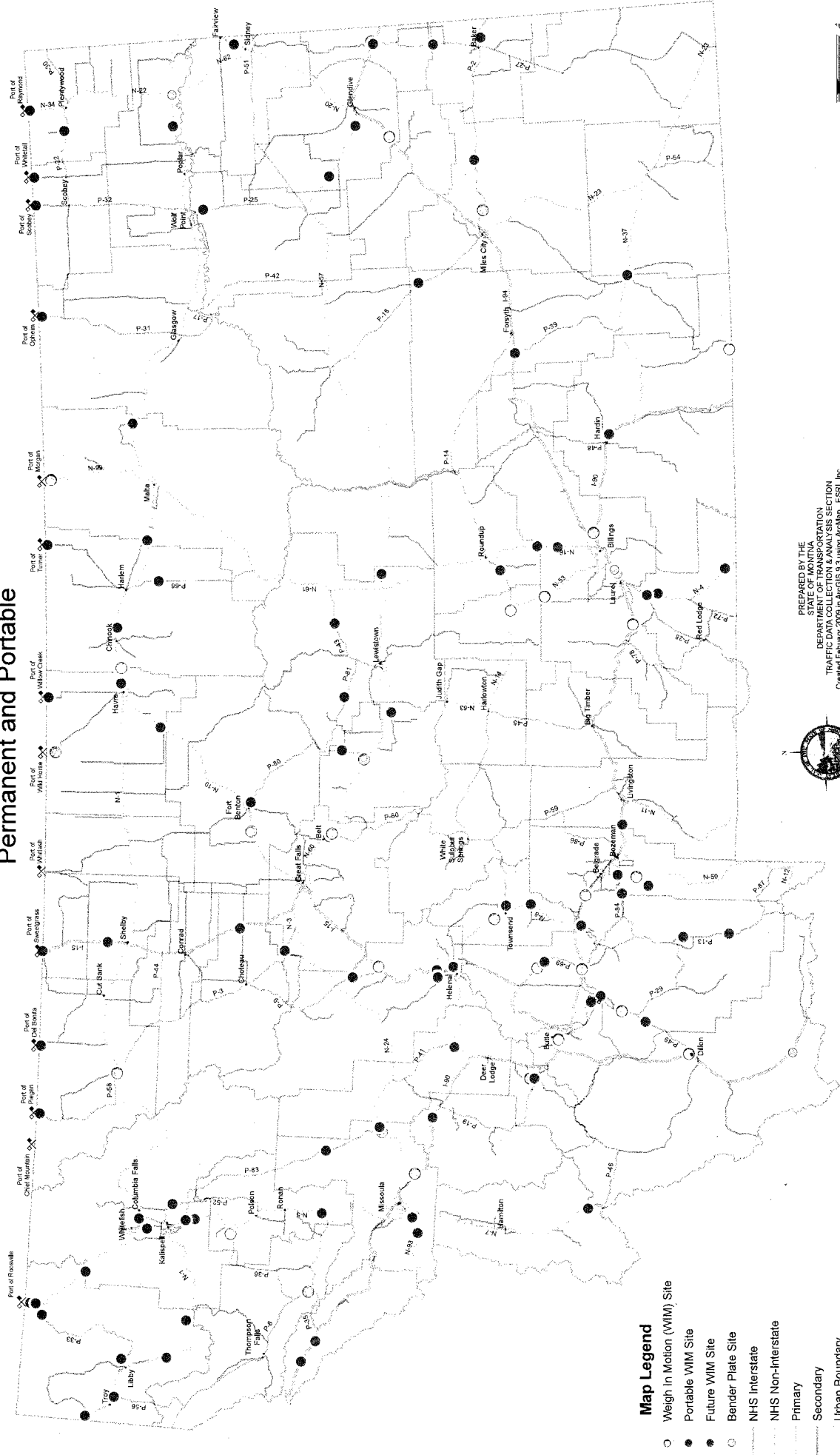
MDT Portable and Platform weight and citation statistics

Federal Fiscal Year	Portable			Platform		
	Number Weighed	Over Weight Citations	# Citations Disputed	Number Weighed	Over Weight Citations	
2005	5,869	472		400,495	454	
2006	5,763	454		369,804	417	
2007	5,793	555		375,222	455	
2008	6,397	471		354,502	543	
Total	23,822	1,952	23	1,500,023	1,869	

% Portable Tickets Issued = 8.2%

% Platform Tickets Issued = 0.1%

Weigh-In-Motion (WIM) Sites Permanent and Portable

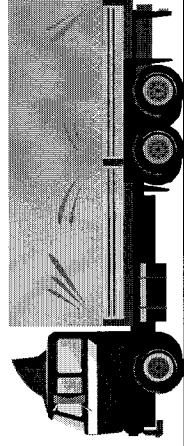


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STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION
TRAFFIC DATA COLLECTION & ANALYSIS SECTION
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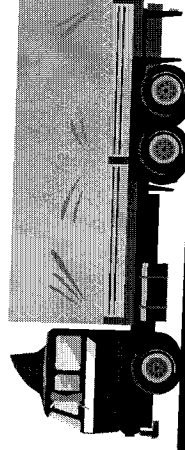


Roadway Grade Comparison

Longitudinal Slopes



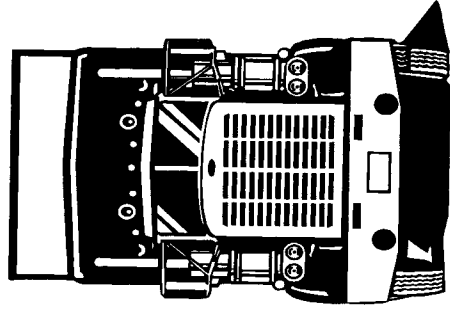
Level Grade



-4% Grade

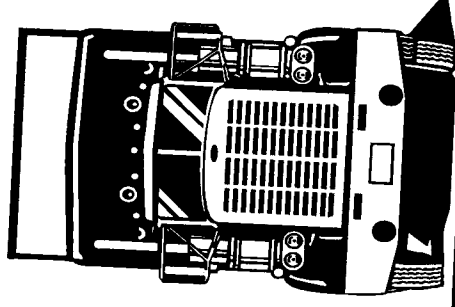
Roadway Grade Comparison

Transversal Slopes



-2% Grade

(CURRENTLY DESIGNED HIGHWAYS)



-5% Grade

All measurements taken on
January 29, 2009

measurements

versus
Certified Platform Scale GVW measurements

Certified Platform Scale Weight 1	Haenni Weight 1 (Weigh all Wheels Simultaneously)		Haenni Weight 2 (Weigh tractor, then trailer)		Haenni Weight 3 (Weigh tractor, then trailer)		Haenni Weight 4 (Weigh tractor, then trailer)		Haenni Weight 5 (Weigh tractor, then trailer)	
	Slopes: Transversal 0.0% Longitudinal 0.0%	% GVW Difference Platform vs. Haenni	Slopes: Transversal 0.0% Longitudinal 0.0%	% GVW Difference Platform vs. Haenni	Slopes: Transversal 4.5% Longitudinal 1.5%	% GVW Difference Platform vs. Haenni	Slopes: Transversal 0.5% Longitudinal 2.0%	% GVW Difference Platform vs. Haenni	Slopes: Transversal 2.6% Longitudinal 1.8%	% GVW Difference Platform vs. Haenni
Total GVW	76800	-1.08%	77000	-0.82%	76250	-1.79%	76100	-1.98%	76600	-1.34%

Portable and platform scale tests - January 29, 2009



Haenni WEIGHT Measurement # 1

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

0% Longitudinal slope (lengthwise) and 0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	76,800
Platform GVW =	77,640
Haenni GVW vs. Platform GVW =	-1.08%

Haenni WEIGHT Measurement # 2

Weighed all wheels simultaneously using 10 Haenni scales

0% Longitudinal Slope (lengthwise) and 0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	77,000
Platform Gross Vehicle Weight =	77,640
Haenni GVW vs. Platform GVW =	-.82%



Haenni WEIGHT Measurement # 3

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

1.5% Longitudinal Slope (lengthwise) and 4.5% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	76,250
Platform Gross Vehicle Weight =	77,640
Haenni GVW vs. Platform GVW =	-1.79%



Haenni WEIGHT Measurement # 4

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

2.0% Longitudinal Slope (lengthwise) and .5% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	76,100
Platform Gross Vehicle Weight =	77,640
Haenni GVW vs. Platform GVW =	-1.98%



Haenni WEIGHT Measurement # 5

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

1.8% Longitudinal Slope (lengthwise) and 2.6% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	76,600
Platform Gross Vehicle Weight =	77,640
Haenni GVW vs. Platform GVW =	-1.34%

Portable and platform scale tests - January 30, 2009



Haenni WEIGHT Measurement # 1

Two Haenni scales used to weigh individual axles in slots on MDT engineered portable weigh site.

0.0% Longitudinal Slope (lengthwise) and 0.0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	71,750
Platform Gross Vehicle Weight =	78,100
Haenni GVW vs. Platform GVW =	-8.13%

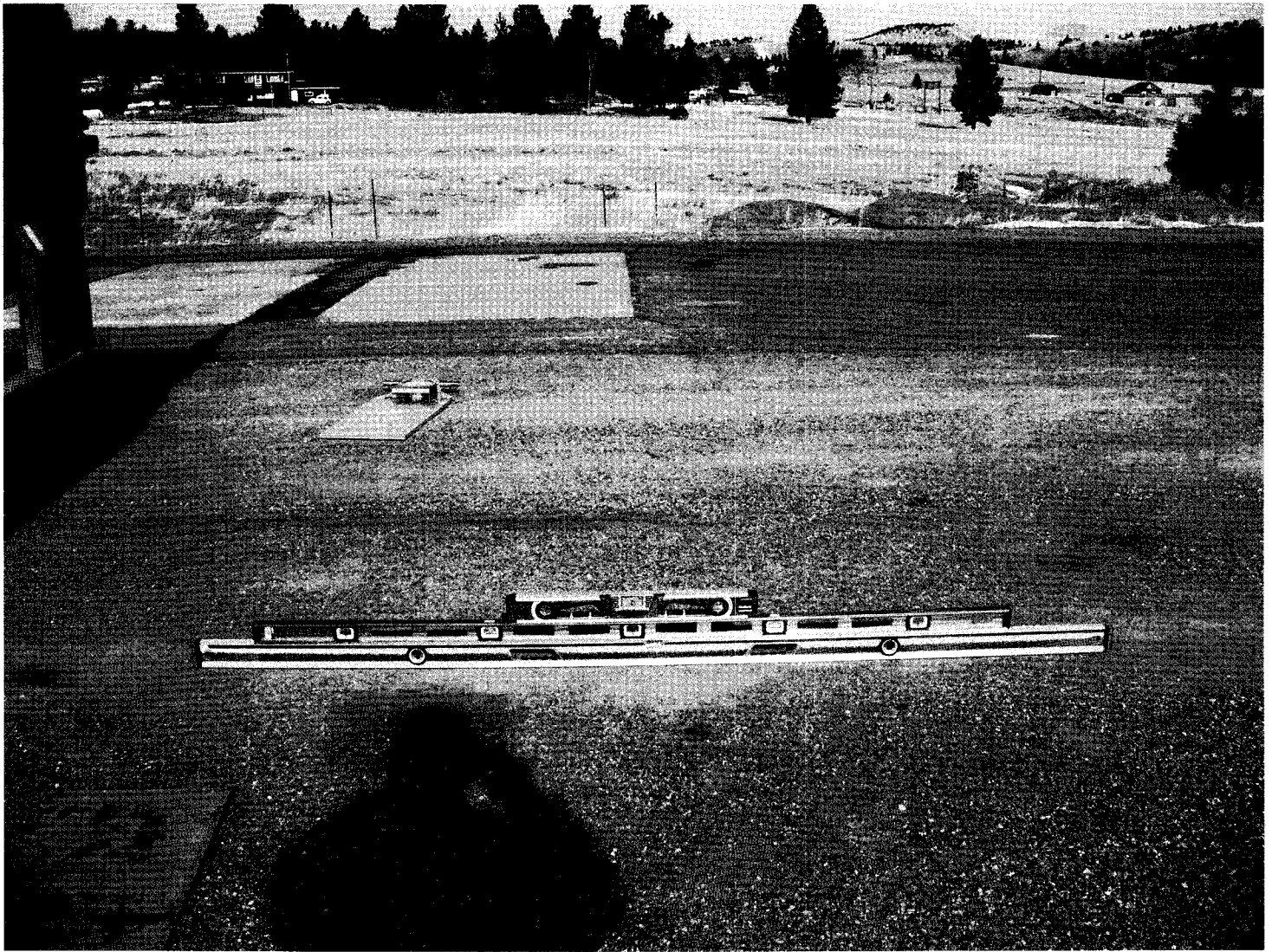


Haenni WEIGHT Measurement # 2

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

0.0% Longitudinal Slope (lengthwise) and 0.0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	76,000
Platform Gross Vehicle Weight =	78,100
Haenni GVW vs. Platform GVW =	-2.69%



Haenni WEIGHT Measurement # 3

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

0.05% Longitudinal Slope (lengthwise) and 1.2% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	77,750
Platform Gross Vehicle Weight =	78,100
Haenni GVW vs. Platform GVW =	-0.45%



Haenni WEIGHT Measurement # 4

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

0.0% Longitudinal Slope (lengthwise) and 0.0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight = 77,500

Platform Gross Vehicle Weight = 78,100

Haenni GVW vs. Platform GVW = -0.77%



Haenni WEIGHT Measurement # 5

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

1.5% Longitudinal Slope (lengthwise) and 4.5% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	78,000
Platform Gross Vehicle Weight =	78,100
Haenni GVW vs. Platform GVW =	-0.13%



Haenni WEIGHT Measurement # 6

Individually weighed single axle and axle groups; steering, then drive tandems, then trailer tandems.

0.5% Longitudinal Slope (lengthwise) and 2.5% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	77,050
Platform Gross Vehicle Weight =	78,100
Haenni GVW vs. Platform GVW =	-1.34%

Portable and platform scale tests – February 6, 2009

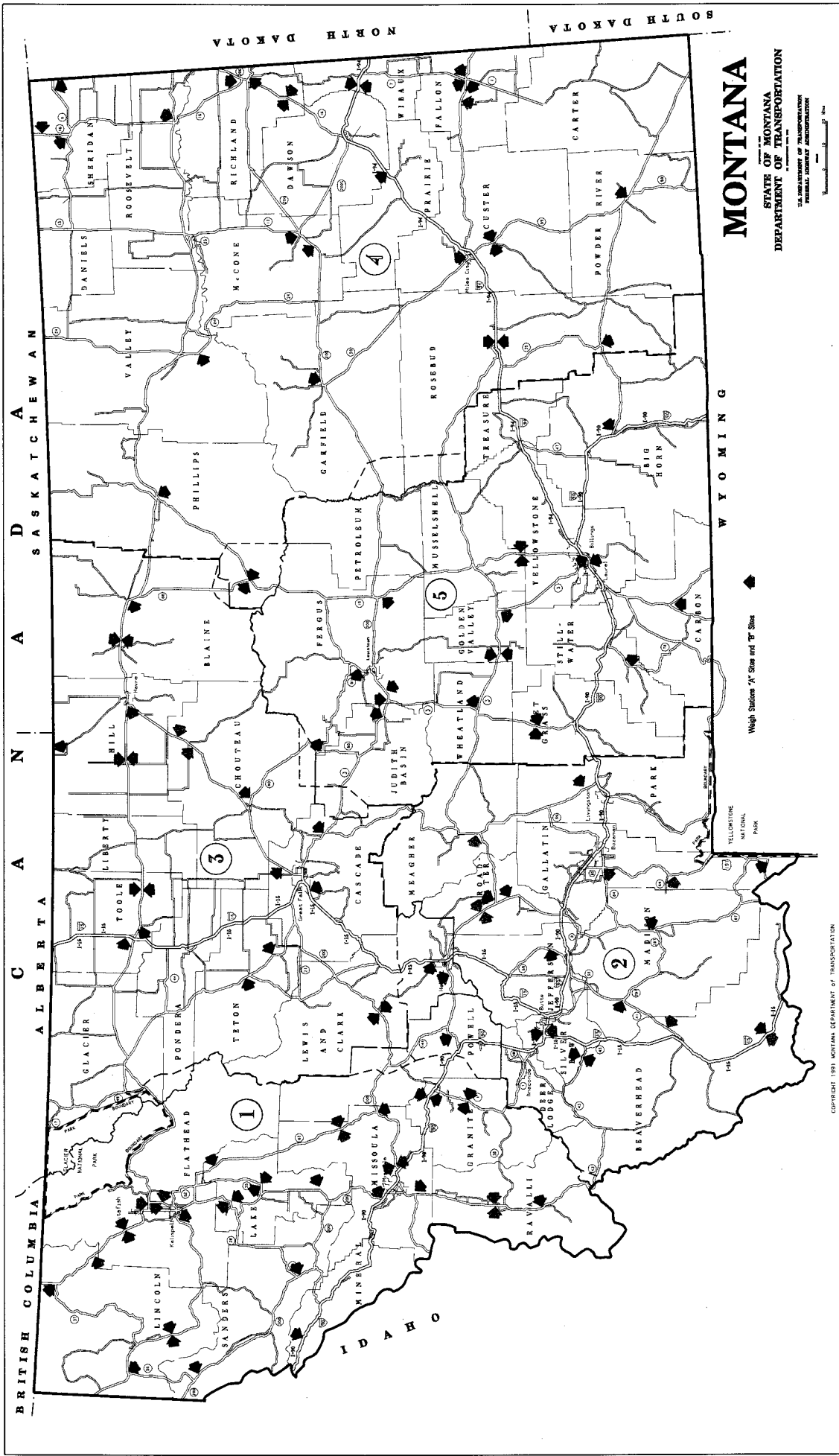


Haenni WEIGHT Measurement # 1

Two Haenni scales used to weigh individual axles in slots on MDT engineered portable weigh site. MT 69 site, South of Boulder

0.0% Longitudinal Slope (lengthwise) and 0.0% Transversal Slope (crosswise)

Total Haenni Gross Vehicle Weight =	77,050
Platform Gross Vehicle Weight =	78,040
Haenni GVW vs. Platform GVW =	-1.27%



MONTANA

STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

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EXHIBIT 2
DATE 2-9-2009
HB HB 356

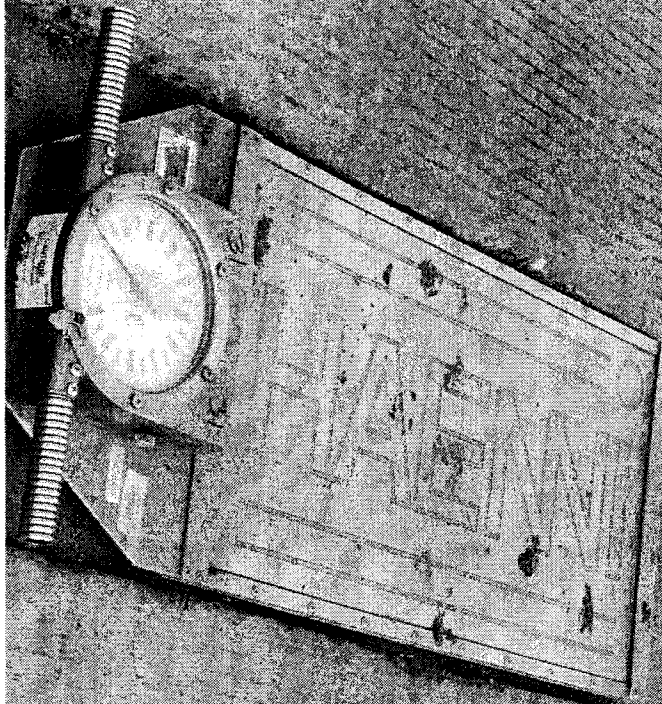


EXHIBIT 2
DATE 2-9-2009
HB HB356

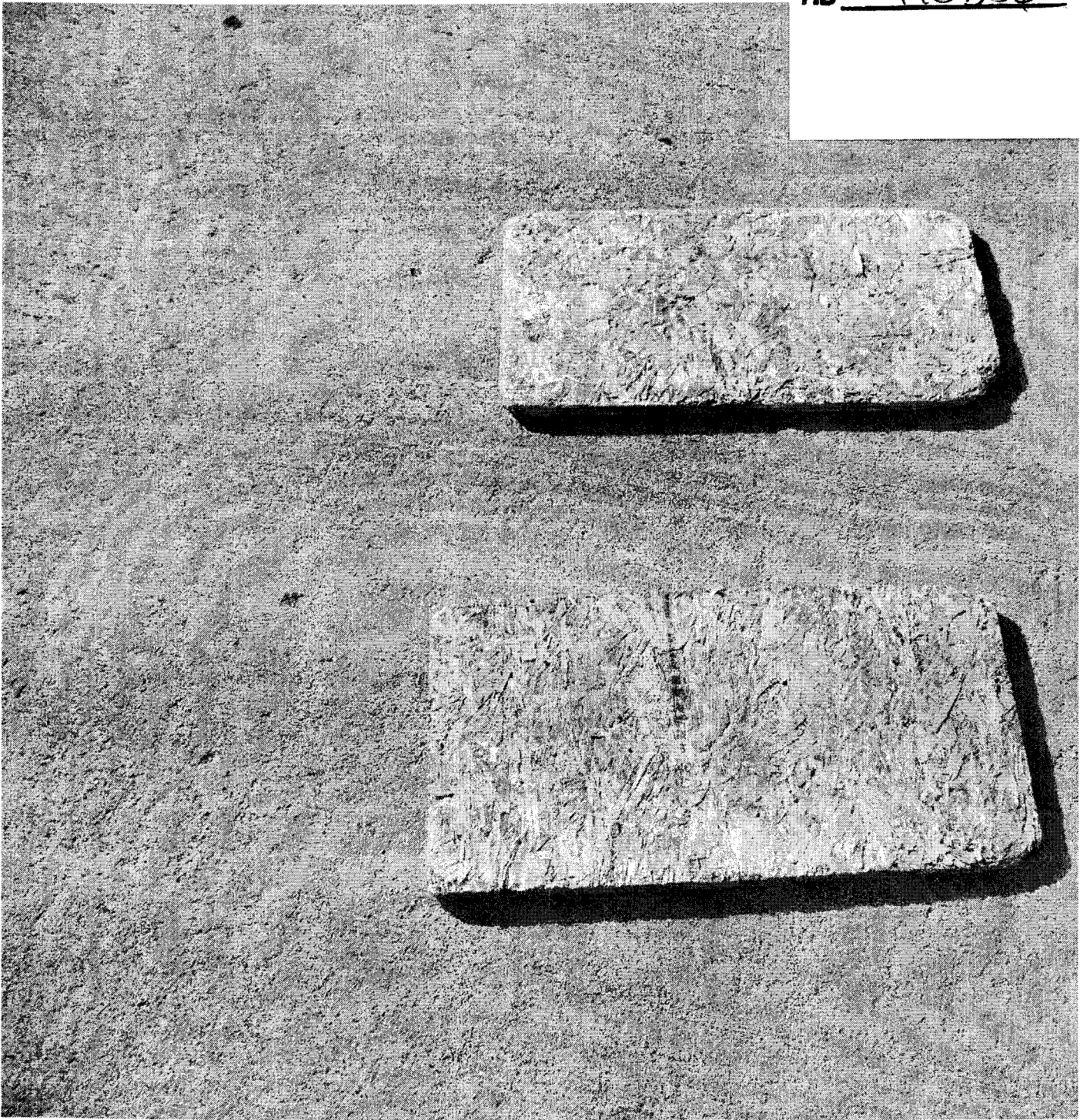
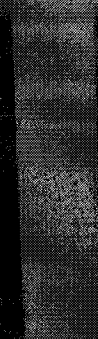


EXHIBIT 2
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HAENNI

the portable scale for all type of
vehicles with rubber tires

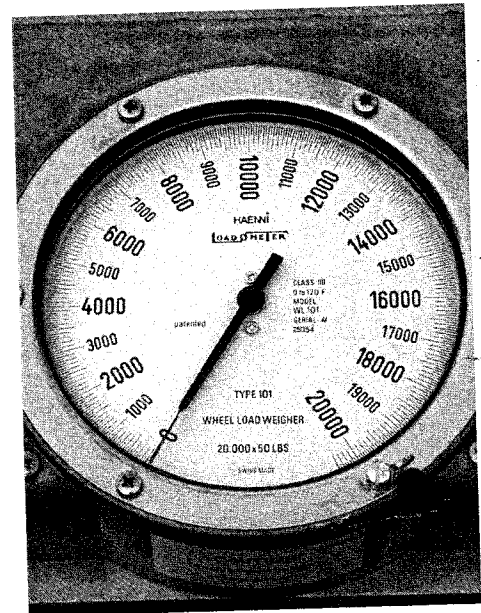
protects against overloading as well
as insufficient loading

assures the exact observance of the
permissible total weights and axle
loads

can always and at any time be used
without connections or ramps

can easily be transported and put to
use by one person alone

is robust, does not require any
maintenance, is practically unaffected
by ambient temperature and is
accurate



Distributor:

LOADOMETER

Loadometer Corporation
3G Nashua Court
Baltimore, Maryland 21221
Phone: 410-574-0102 or 800-753-6696 | Fax: 410-574-2865
info@Loadometer.com

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HAENNI Wheel Load Scales

Phone +41 31 764 99 77
Fax +41 31 764 99 88

3303 Jegenstorf, Switzerland

E-mail: info@haenni-scales.com
<http://www.haenni-scales.com>

HAENNI

Wheel Load Scales WL 101

Operating Instructions

